

REMARKS

Claims 1-16 stand rejected under 35 USC 101. Claims 1-12 have been cancelled rendering moot the rejection of those claims. Claims 13 and 14 have been amended to overcome the rejection under 35 USC 101.

Claims 13 and 14 stand rejected under 35 USC 103 over Follert et al in view of Hayashi et al and claim 16 stands rejected under 35 USC 103 over Follert et al in view of Hayashi et al and further in view of Gibson et al. Claims 13-15 further stand rejected under 35 USC 103 over Cass in view of Hayashi et al.

Claims 13 and 14 have been amended to specify that the drive shaft is hollow. Claims 13 and 14 have been further amended to specify a liquid supply means for supplying water through the hollow drive shaft to the boring bit and a slurry removal means for removing slurry made by the boring bit to a location rearward of the boring head.

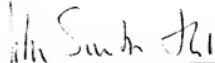
Applicant submits that the cited references, whether taken singly or in combination, do not disclose or suggest the subject matter of the amended claims 13 and 14. Specifically, applicant submits that the prior art does not disclose or suggest a liquid supply means and a slurry removal means, as specified in claim 13 or 14. Applicant therefore submits that claims 13 and 14 are patentable. It follows that the dependent claims 15-26 also are patentable.

The examiner relies on Follert et al as disclosing a hollow drive shaft and suggests that it would have been obvious in view of Gibson et al to supply water to the boring bit through the hollow drive shaft of Follert et al. Applicant submits that the examiner reads too much into the disclosure of Follert et al and Gibson et al. The passages of Gibson et al referred to by the examiner do not refer to either cleaning debris away from the face of the bit or to lubricating the bit as it drills. In any event, the primary purpose in supplying the slurry to the drilling head of Gibson et al is to drive the fluid turbine motor 62, and since Follert et al does not disclose that the rotating cutting head 13 is driven by a fluid turbine motor, the prior art does not reveal any motivation for supplying liquid to the cutting head 13 of Follert et al. Further, the structure 14 referred to by the examiner as constituting a hollow drive shaft in FIG. 1 of Follert et al is not described as a drive shaft but as a frame. Since the

head 13 is advanced relative to the frame 14 by means of a hydraulic advance ram 16 accommodated within the frame (column 3, lines 2-5), it appears that the frame 14 does not constitute a hollow drive shaft for the head but comprises two parallel plates.

The arguments presented in support of claims 13 and 14 are applicable to claim 27. Accordingly, claim 27 also is patentable.

Respectfully submitted,


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